



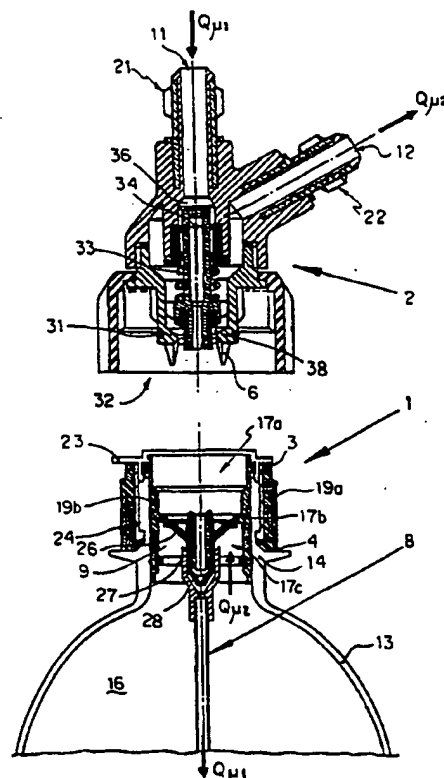
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>B67D 1/08</b>	<b>A1</b>	(11) International Publication Number: <b>WO 95/11855</b> (43) International Publication Date: 4 May 1995 (04.05.95)
<p>(21) International Application Number: PCT/BR94/00032</p> <p>(22) International Filing Date: 26 October 1994 (26.10.94)</p> <p>(30) Priority Data: PI 9304369 26 October 1993 (26.10.93) BR</p> <p>(71) Applicant (for all designated States except US): IMI CORNELIUS BRASIL LTDA. [BR/BR]; Rua Itaocara, 97, Rio de Janeiro, RJ (BR).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): CARVALHO MOTTA, Carlos, Fernando [BR/BR]; Rua Pio Correa, 110/706, Rio de Janeiro, RJ (BR). DE ASSIS REIS FREITAS, Francisco [BR/BR]; Rua Visconde de Tocantins, 27/606, Méier, Rio de Janeiro, RJ (BR).</p> <p>(74) Agent: DANNEMANN, SIEMSEN, BIGLER &amp; IPANEMA MOREIRA; Rua Marquês de Olinda, 70, Botafogo, 22251-040-Rio de Janeiro RJ (BR).</p>	<p>(81) Designated States: AM, AT, AU, BB, BG, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ).</p> <p><b>Published</b> With international search report.</p>	

(54) Title: CONTAINER CONNECTION DEVICE, FLUID DISPENSING ASSEMBLY THEREFOR AND CONTAINER PROVIDED THEREWITH

## (57) Abstract

A connection device (1) for containers (13) suitable for holding fluids, concentrates and the like which are engageable to a liquid pre- and post-mix dispensing apparatus and/or a source of fluid extracting assembly (10) are proposed wherein said connection device has a cavity housing internal valve means (5, 9, 15, 15', 15'', 25, 26, 27, 28) for closing and opening controllable passages so as to simultaneously direct flows ( $Q_{u1}$ ,  $Q_{u2}$ ) of fluids of different viscosity ( $u1$ ,  $u2$ ) in opposite directions through said cavity when said connection device is coupled by an actuator device (2) thereby forming said fluid extracting assembly (10). As a result thereof stainless steel containers, plastic pockets suction pumps and the like in known liquid dispensing systems are replaced by disposable containers for storing and delivering concentrates within a fluid dispensing system when coupled by the fluid extracting assembly (10).



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

- 1 -

Container connection device, fluid dispensing assembly  
therefor and container provided therewith.

### Background of the invention

#### FIELD OF THE INVENTION

The present invention relates to fluid connection components, specifically to connection and extraction devices 10 for containers and more particularly for containers engageable to equipments within a liquid dispensing system that processes two or more fluids having different viscosity to dispense a final fluid.

Among the many systems for dispensing a final prod- 15 uct resulting from the combination of two or more fluids having different viscosity are equipments basically including a source of gaseous fluid, a container for storing beverage concentrate, generally called syrup and the beverage-dispensing machine, which combines these two fluids having different 20 viscosity with water and dispenses cold gaseous beverages commonly known as soft drinks.

#### The Prior Art

Within a dispensing system having equipments for dispensing soft drinks the fluids of different viscosity circulate through tubes linked by way of standard connection components already quite simplified between a pressurisation source, a suction pump, one or more containers containing the concentrate and the beverage-dispensing machine.

Containers holding the syrup are usually made of stainless steel and with undesirably large dimensions, which are returned after use afterwards submitted to cleaning for removing the residues, thereby generating additional costs. On the other hand, these containers obliges the user of the machine to maintain the same product stored for an undesirable period of time.

In another known embodiment, the syrup is packed in plastic pockets, which have the disadvantage of not enduring pressurisation, requiring the employ of suction pumps or another mechanism additional to the container besides the small capacity.

The use of any of these reservoirs requires the availability of assemblies having differentiated couplings for each of the pressurisation devices and/or suction devices. The need for having an easier and user friendly dispensing system is not satisfied due to the dimensions of the containers as well as to the maintenance and operational costs associated therewith.

Therefore, it is most desirable to replace such costly componentry by more simple, disposable containers which do not involve new technology so as to eliminate the constraints cited above. Such containers can be, for instance, the disposable plastic bottles of the PET type, which, can be engaged by the low-cost, reliable, simple and un-complicated connection device and extracting assembly of the present invention, for storing and delivering the concentrate within a fluid dispensing system.

### Objects of the invention

In a first aspect the invention relates to a con-

nection device placed on the neck of the container, preferably but not exclusively to the neck of a disposable commercial bottle holding the concentrate, maintaining it sealed with respect to the environment and in immediate availability to be included in the process of preparing beverage, and in a second aspect to a fluid-extracting assembly actuating on the neck of this bottle which is formed by the above-mentioned connection device and by a second device couplable thereto, for controlling the passage of two fluids having different viscosity through the neck of said bottle.

The second device, in turn, is engageable with a source of pressurisation and with the beverage-dispensing machine.

Therefore, the devices of the present invention enable the replacement of the syrup holding containers employed in the prior art by low-cost disposable bottles, and the elimination of suction pumps or additional mechanisms.

The present invention is described for a preferred application embodiment, for instance, in disposable bottles containing concentrate for obtaining a gaseous beverage, but its use not being limited to this type of container.

#### Summary of the Invention

According to the principles of the present invention a connection device securable to the neck of a bottle of the PET type renders said bottle engageable with the machines mentioned previously. The device is provided with tamper-sensitive means for protecting and identifying the type and origin of the concentrate and internal blocking valve means for a perfect tightness thereof.

This connection device is obtained with a low production cost, by virtue of the ingenious space disposition of the internal flow-blocking elements and the resilient properties of their materials, which are placed within the neck and establish isolated flow paths closed by a sealing-wax in the upper portion during the storage. Sanitary plastic materials such as high and low density polyethylene, centroprene or equivalent rubbers are employed in the manufacture thereof.

The liquid-extracting assembly is suitable for insuflating a gaseous fluid for the extraction of concentrate out of the container, in a substantially simultaneous manner and through its neck.

5           The liquid-extracting assembly of the invention is formed by the connection device secured to the neck of the bottle and by a second device provided with actuating members to engage normally closed selfblocking elements of the connection device upon the coupling of the same. Due to said cou-  
10 pling the bottle containing the concentrate remains in fluid communication with the gaseous source and with the pre and/or post mix liquid-dispensing machine.

The bottle with the extraction assembly applied can operate in any position from 360° with respect to the horizon-  
15 tal plane, that is to say, the work positions of the container can be entry both downwards and upwards, with three possibilities of extracting liquid from the container, namely, by pressure, by gravity and by pumping, and all the combinations thereof.

20           The first device of the extracting assembly engageable with the neck of the bottle of concentrate has:  
- engagement means compatible with the respective means existing at the neck of known containers such as threads,  
- a tamper-sensitive means, for instance, a tamper-proof seal-  
25 ing for ensuring the tightness and quality of the concentrate,  
- devices for tightly receiving the coupling concentrate-dispensing piece of the extracting assembly,  
- a barrier region provided with guide devices such as recesses to be engaged by respective engagement shoulders of the  
30 concentrate-dispensing complementary coupling piece of the present assembly,  
- and a plurality of valve obturating elements associated with passages and courses for the flow of fluids having different viscosity, such as CO2 or compressed air by a first flow  
35 course and liquid concentrate by the other flow course in opposite directions, through the neck of the disposable bottle, generically called internal valve devices.

The connection also has a tube that extends as far as the bottom of the bottle, for both pressurization of the

interior and for collecting fluid from the interior and conducting it to the dispensing machine, depending upon the operation mode.

The complementary distal device of the bottle of the present extracting assembly, which couples the device located at the neck, has:

- independent connection ends for insufflating CO<sub>2</sub> and extracting fluid, simultaneously interconnecting the bottle with a source of pressurisation and the dispensing machine;
  - 10 - actuating means at the cap portion, which forms a sealing, and valve closing means located at the first device engageable with the neck of the bottle; and
  - means engaging with engageable surfaces disposed at the first connection device engageable with the neck of the bottle
- 15 for establishing the tightness of the interconnection.

As a result of the teachings of the present invention, the suction pumps, the reservoirs of stainless steel and the pockets of the prior art are eliminated and replaced by the known disposable bottles. Besides this unexpected application of the disposable bottles of the PET type, the user

20 has the possibility of storing different concentrates with a rapid replacement of flavours, with a considerable reduction of space and costs by eliminating equipment that is indispensable in the prior art.

25 These and other features and advantages of the present invention will become more apparent when taken in conjunction with the following detailed description of the preferred embodiment and the following drawings.

#### Description of the Drawings

30 - Figure 1 shows a partial longitudinal section view of a known PET bottle containing syrup and the liquid-extracting assembly formed by the two mutual coupling means dismembered before their operation. Such a situation is typical during the storage of the concentrate.

35 - Figure 2 shows an enlarged longitudinal section view of the first connection device secured by conventional means to the neck of the bottle and a view of a diametral sec-

tion thereof;

- Figure 3 shows a longitudinal section view of the second couplable and distal device, which together with the device of figure 3 forms the liquid-extracting assembly and a lower view in diametral section; and

- Figure 4 shows a partial longitudinal section view similar to figure 1, but with the internal prolongation element displaced from its central position for collecting liquid from the bottom.

#### 10 Detailed Description of the Preferred Embodiment

The connection device 1 shown in Fig. 1 is secured to the neck 14 of a known bottle 13 and the coupling device 2 for engaging the container to the beverage-dispensing device by connection tubes to be linked at the respective distal ends 11 and 12, just before the coupling.

During the first mode of application, namely storage of the concentrate in the bottle 13, only the device 1 is secured to the neck 14.

The body of the device 1 defines a cavity delimited by a continuous skirt wall 19a, the height of which is delimited by peripheral upper 3 and lower 4 edges and a cap 23 provided with tamper-sensitive means disposed at the peripheral upper edge 3, being open on the opposed perimetrical edge 4 to the interior 16 of the container 13. The skirt 19a is internally provided with conventional threads 24 or similar means for engagement with the neck 14 of the container 13.

According to the preferred embodiment, the reference number 19b indicates a cylindrical wall having a smaller diameter than the diameter of the neck 14 with a peripheral face and an internal face opposite each other, which extend along said cavity. The cylindrical internal wall 19b and the peripheral wall 19a are joined by bridges alternating with the tamper-sensitive means of the cap 23 so as to define a peripheral circular space for receiving the neck 14 of the container 13. The inner face of the cylindrical wall 19b delimits a central space, which extends longitudinally from the portion of the cap 23 to the opposed open end along a first upper end re-



gion 17a, suitable for receiving the support device 2, an intermediate barrier region 17b and a lower end region 17c. The reference numbers 9, 26, 27, 28 indicate internal valve means through which fluids with different viscosity Qu1 and Qu2 can pass, in opposed directions between the upper and lower end regions 17a, 17c substantially at the same time.

The suspended device 2 shown in figure 1 forms, together with the device 1, the fluid-extracting assembly and its inclusion in the figure is intended to facilitate the understanding of the claimed assembly. The device 2 will still be described with reference to figure 3.

Figure 2 shows an enlarged view of the device 1 in longitudinal section and a diametral section thereof.

Again, the two concentric cylindrical walls 19a, 19b, the cap 23 and the three regions 17a, 17b and 17c are indicated.

The upper region 17a is hollow and the walls form a seat suitable for receiving and guiding guide elements 29 of the device 2 during the insertion thereof.

The region 17b is substantially located at the half of the length of the device, its cross area is divided into passages 5, 15, 15', 15", usually closed when the container is not in use. The passage 5 can be crossed by a first fluid Qu1, and the passages 15, 15', 15" can be crossed by a second fluid Qu2, both of a different viscosity and in a substantially simultaneous manner in opposed directions between the upper and lower end regions 17a, 17c, when the container is in use, by inserting the device 2 into the end region 17a of the device 1.

The view in diametral section show the central passage 5 for establishing a first communication by a fluid of a first viscosity Qu1 and a plurality of passages 15, 15', 15" disposed around said central passage 5 for establishing another communication by a fluid of a second viscosity Qu2 and isolated from the first one. The reference number 25 indicates cuts engageable with complementary projections 29, formed in the device 2. The radial distribution of the cuts 25 is specific of the contents of the bottle for the purpose of ensuring the correct composition of the concentrate in dispensing

the beverage and help in the tightness thereof.

The internal valve device 26,27,28 is a final flow-controlling element that extends axially by the region 17a, The final flow-controlling element has a tubular body 27 with 5 two opposed and distal ends and with obturating portions 26 adjacent one of said ends of the body, forming a single piece. One end is open and turned to the intermediate region 17b, ending at a bead aligned with the central passage 5. The opposed distal end terminates in a narrowing 28 with a normally closed 10 passage bore that blocks the central passage 5. The blocked portions 26 are distributed radially around said bead at the open end and maintains the passages 15,15',15" normally closed. The final flow-controlling device 26,27 is kept in a central position by a spacer 32 connected by arms 33,33',33" 15 to the internal wall 19b of the device 1. The spacer 32 in longitudinal section has two opposed H-shaped concavities. Both concavities are communicated by a central bore 35. One concavity receives the narrowing 28. The opposed concavity receives a prolongation element 8 by means of an adaptation 34. 20 The passage bore in the narrowing 28, the central bore 35 of the spacer 32 and the prolongation element 8 are aligned and can be crossed by said first fluid during the use of the container.

The annular chamber 9 is open in the direction of 25 the lower region 17c and blocked in the direction of the upper region 17a of the device 1 by the plurality of passages 15,15',15", located in the region 17b, which are normally closed by the respective obturating planes 26 from the lower region 17c.

30 The obturating portions 26 control the second of the two fluid communication between the two end regions 17a and 17c.

Although the figure illustrates the bottle in the normal position for the mode of storing the concentrate, the 35 central location of the prolongation element 8 corresponds to the condition in which the bottle operates with the entry directed downwardly.

The final flow-controlling element 26,27 can be a valve of the Vernier or duck-bill type and is manufactured

from a resilient material. It should be noted that the command of the flows in opposed directions of the first and second fluids occurs within the circular section and the height of the neck 14 of a PET-type bottle.

5           Figure 3 shows a longitudinal section of the distal device 2 couplable to the top of the device 1 of figure 1 and a lower view thereof.

The device 2 distal with respect to the bottle basically comprises:

10           - a body formed by a peripheral skirt 28 with shoulders for facilitating maintenance;

            - a lower coupling face 32, delimited by the perimeter of the peripheral skirt 28, being engageable at the portion of the sealing 23 and on the peripheral skirt 19a of the  
15 device 1;

            - a pair of distal connection ends 11, 12 for connection by respective tubes retained on shoulders 21 and 22 to a gaseous source and to the liquid-dispensing machine; and

            - a retractile central actuator 31 under spring  
20 action and a plurality of fixed actuators 6 distributed concentrically around the actuator 31 and cooperating with each other, surrounded by the internal wall of the skirt 28.

The actuators 6, 31 actuate in the direction of insertion, cross the tap 23 and simultaneously engage the final  
25 flow-controlling element 26, 27 for opening the normally closed passages 5, 15, 15', 15" in the device 1 and establishing two independent fluid communication between the free end of the device 1 and the pair of distal ends 11, 12 of the device 2, when both are led to the reciprocal coupling.

30           The actuator 31 is formed by a rod with a first closed end and the opposite end open. The rod 31 is retractile and tensioned by a spring 30, which limits its displacement to two end positions aligned with the axis and that correspond to respective conditions of blocking and simultaneous conduction  
35 of first and second fluids.

The closed end of the rod 31 is downstream of the distal connection 11. The opposite open end is engageable with the bead of the upper end of the element 26, 27 shown in figure 2. The rod 31 has a non-through axial bore 39 inter-

cepted by a transverse bore 34, forming a "T" at the proximity of the closed end. The rod 31 is guided by guide surfaces 35 near said closed end. The bores 34 are blocked by said guide surfaces 35.

5           The internal diameter of the distal end 11 extends in the direction of the rod 31 and is greater from a given distance to create the cavity 36 located upstream of the guide surfaces 35. Said cavity 36 is suitable for receiving the upper end of the rod 31 provided with the bore 34 during the re-  
10 traction of the rod 31.

The actuators 6 have the form of prominences and, in the present example, are conical claws. The conical claws 6 have a penetration end to cross the cap 23 and a back upper flank as seat of a portion of the open end of the actuator 31.

15           The tensioning force of the spring 30 maintains the rod 31 impelled against said back upper flank of the claws 6. This situation occurs with the device 2 uncoupled from the device 1, and there is no communication between any pair of distal ends 11, 12 and the coupling face 32 at the side of the  
20 free end of the device 2.

The claws 6 perforate the cap 23 and maintain the mutual coupling between the devices 1 and 2 in a rigid manner. The reciprocal coupling between the devices 1 and 2 overcomes the tensioning force of the spring 30 and the rod 31 retracts  
25 into the cavity 36 sliding along the guide walls 35 and leaving the bore 34 unblocked within the cavity 36. Simultaneously the rod 31 presses the bead of the final control element 27, opening by transmission the normally closed bore at the opposite end 28 and unblocking the central passage 5.

30           A first fluid communication Qu' between the distal end 11 connectable to a gaseous source and the interior 16 of the bottle 13 forms through the extracting assembly of the invention. The first one of said fluids floods the chamber 36, crosses the rod 31 by the radial and axial bores 34 and 39 of  
35 the device 2, passes to the device 1 through the central passage 5 and the internal wall of the final control element 27, the bore at the end 28 and the bore 35 of the spacer 32 and the open section of the prolongation element 8, the insufflated gas reaching the interior 16.

Simultaneously, the claws 6 actuate on the blocked portions 26, opening the normally closed passages 15,15',15" in the device 1 and with the retraction of the rod 31 the annular passage 38 appears, which is formed by the separation 5 of the end portion of the rod 31 of the back upper flank of the claws 6 and that communicates to the distal end 12 through the annular chamber 10 in the device 2.

A second fluid communication Qu2 in opposed direction to that of Qu1 is established between the distal end 12 10 engageable with a dispensing machine and the interior 16 of the claw 13. The second fluid Qu2 leaves the interior 16 of the container 13 impelled by the insufflation of the first fluid towards the distal end 12. This flow Qu2 follows a course isolated from the previous one, crosses the lower region 17c the chamber 9, the passages 15,15',15" in the region 17b, the annular passage 38 formed by the retraction of the rod 31, the annular open chamber 10 to the distal end 12, connectable to the dispensing machine.

In the lower plane view of the device 2 the reference number 28 indicates the peripheral skirt that forms the 20 body of the device 2, a radial distribution of shoulders 29 and the penetration flanks of the claws 6 seen from the coupling face 32. The radial distribution of shoulders 29 is intended to engage a respective radial distribution of recesses 25 25 located in the device 1, to ensure the tightness of the extracting assembly. The penetration flanks of the claws 6 perforate the sealing 23, cross the upper region 17b and rest in the region 17c with retention in the region 17b.

Figure 4 is a view in longitudinal section of the 30 device 1 of figure 2, but with the prolongation element 8 connected to the chamber 9.

The prolongation element 8 acts as a fisher and in fluid communication with the distal end 12 when the devices 1 and 2 are coupled.

35 In this mode of use, the entry of the bottle is directed upwards, that is, upright, so that the liquid is "caught" by the prolongation element 8 and conducted to the chamber 9 as a result of the injection of fluid through the central passage 5.

The normal or inverted orientation of the disposable bottle determines the positioning of the prolongation element 8.

The extracting assembly of the present invention 5 further permits that only CO<sup>2</sup> will be utilized, so that there will not be any risk of contaminating the surrounding air, which would cause the presence of undesired taste and odor in the product. In this way, oxidation of the product is also avoided, due to the absence of oxygen.

10 The connection device and the extracting assembly of the present invention are not exclusive of the present embodiment described. The containers provided with the connection device and the extracting assembly are equally suitable for use in different areas and with different liquids, among which 15 the following are pointed out:

- concentrates of juices and natural or artificial effusions of fruits and herbs;
- juices and natural or artificial effusions of fruits and herbs;
- 20 - concentrates of natural or artificial soft-drinks;
- concentrates of milk products and its derivatives;
- concentrates of alcoholic beverages;
- alcoholic beverages;
- concentrates of chemical products and detergents;
- 25 - chemical and detergent products.

Therefore, although the invention has been described in terms of a particular embodiment and application, any person skilled in the art, based on these teachings, can generate additional configurations and modifications without the risk 30 of departing from the spirit or extending the scope of the invention as claimed. Consequently, it will be understood that the figures and descriptions disclosed here are given as an example to facilitate the understanding of the invention and not to limit its scope.

## CLAIMS

1. A connection device (1) for containers (13) suitable for holding fluids, concentrates and the like, engageable to a liquid pre- and post-mix dispensing apparatus and/or a source of fluid, comprising a body formed by a continuous peripheral skirt (19a) having opposite upper (3) and lower (4) perimetric edges, a cover portion (23) provided with tamper-sensitive means and disposed at said upper perimetric edge (3) and an opening at the opposite edge (4) delimiting a cavity for receiving a neck portion (14) of the container (13) and sealing its inner space (16) against the environment, the connection device (1) being characterised in that the cavity houses internal valve means (5,9,15,15',15'',25,26,27,28) for closing and opening controllable passages so as to simultaneously direct flows (Qu1,Qu2) of fluids of different viscosity (u1,u2) in opposite directions through said cavity.

2. A connection device (1) according to claim 1, characterised in that said internal valve means (5,9,15,15',15'',25,26,27,28) are susceptible of introduction in said neck portion (14) of said container (13).

3. A connection device (1) according to claim 1 or 2, characterised in that the cavity includes a cylindrical wall (19b) having a smaller diameter than the diameter of the neck (14), with opposed peripheral and internal faces, said cylindrical wall (19b) and peripheral wall (19a) joined by alternate bridges with the tamper-sensitive means of said cover portion (23), the peripheral face of the cylindrical wall (19b) and the internal face of the peripheral skirt (19a) of the device (1) delimiting a circular space for receiving the neck (14) of the container (13) and the inner face of the cylindrical wall (19b) delimiting a central region that presents in longitudinal direction a first upper end region (17a) adjacent to the cover portion (23), suitable for receiving an actuator device, a barrier region (17b) and a lower end region (17c), adjacent to and in continuation with each other, the end regions (17a,17c) being isolated from each other by said

internal valve means (5,9,15,15',25,26,27) housed in the intermediate barrier region (17b) and in the lower region (17c), said internal valve means (5,9,15,15',15",25,26,27) being operable for directing said fluids of different viscosity 5 (Qu1,Qu2) substantially at the same time in opposed directions through the upper and lower end regions (17a,17c) of said connection device (1).

4. A connection device (1) according to any of the preceding claims, characterised in that said fluids of different 10 viscosity (Qu1,Qu2) comprise a first flow of gas (Qu1) and a second flow of liquid (Qu2).

5. A connection device (1) according to any of the preceding claims, characterised in that said internal valve means comprise a central passage (5) which traverses the 15 intermediate region (17b) and the end region (17c), to be flooded with a first fluid (Qu1), and a plurality of substantially equal passages (15,15',15"), distributed in the form of a ring around and isolated from said central passage (5), to be flooded with a second fluid (Qu2).

20 6. A connection device (1) according to any of the preceding claims, characterised in that said plurality of passages (15,15',15") and said passage (5) are normally closed passages.

7. A connection device (1) according to any of the 25 preceding claims, characterised in that the centrally disposed passage (5), suitable for being flooded with a first fluid, traverses an annular chamber (9) flooded by said second fluid (Qu2), said chamber (9) perimetrically delimited by the internal face of said cylindrical wall (19b) along the end region 30 (17c), said chamber (9) being communicable with the intermediate barrier region (17b) by said plurality of normally closed passages (15,15',15") and open on the opposite end.

8. A connection device (1) according to any of the preceding claims, characterised in that the internal valve 35 means comprise a final control element (26,27) that controls flow of said first and second fluids having different viscosity (Qu1,Qu2), formed by a centrally engageable obturator portion (27) for blocking and directing the flow of said first fluid (Qu1) through said central passage (5) and a



plurality of obturator portions (26) integral therewith and peripherally engageable to block and direct the flow of said second fluid (Qu2) through said passages (15,15',15").

9. Connection device (1) according to any of the preceding claims, characterised in that said centrally engageable obturator portion (27) comprises a shoulder to be actuated by a first actuator means (31) of said actuator device (2) so as to communicate by a first fluid (Qu1) a central space of said end regions (17a,17b) through said normally closed passage (5) in an open condition, and said plurality of peripherally engageable obturator portions (26) comprising plane surfaces to be actuated by second actuator means (6) of said actuator device (2) so as to communicate by said second fluid (Qu2) a respective space other than said central space of said end regions (17a,17b) through respective normally closed passages (15,15',15") in an open condition substantially at the same time.

10. A connection device (1) according to any of the preceding claims, characterised in that the final control element (26,27,28) comprises a Vernier or duck-bill valve type.

11. A connection device (1) according to any of the preceding claims, characterised in that the final control element (26,27,28) is expansible.

12. A connection device (1) according to any of the preceding claims, characterised in that the final control element (26,27,28) is made of sanitary material.

13. A connection device (1) according to any of the preceding claims, characterised in that it further comprises a prolongation element (8) with a first end being engageable with said centrally obturator portion (27) so as to be in alignment with the central passage (5) and a distal end for conducting a fluid through said device (1) and a remote place therefrom.

14. A connection device (1) according to any of the preceding claims, characterised in that it further comprises a prolongation element (8) with a first end communicating to said annular chamber (9) and a distal end for conducting a fluid through said device (1) and a remote place therefrom.

15. A fluid-extracting assembly (10) suitable for

use with a container (13) engageable with a pre- and postmix liquid dispensing apparatus, characterised by comprising first and second coupling devices to join each other:

- the first (1) of said devices (1,2) as defined in 5 any of claims 1 through 14; and
  - the second device (2) comprising:
    - a body formed by a peripheral skirt (28) with two substantially opposite connection end sides (32,11,12);
    - a first end side defining a coupling face (32) 10 engageable with said first device (1) and the opposite connection end side thereof formed by a pair of distal ends (11,12) for fluid connection by tubes respectively connecting said fluid-extracting assembly to said liquid dispensing apparatus and said fluid source;
    - 15 - the coupling face (32) comprising a peripheral edge and an adjacent internal wall of said peripheral skirt (28) for resting on the cover portion (23) and respectively engaging the peripheral portion of the skirt (19a) of said device (1), further comprising first (31) and second actuator 20 means (6) that cooperate with each other;
      - the first actuator means (31) being spring loaded and substantially central and the second actuator means formed by a plurality of fixed claw-shaped protrusions (6) distributed in the form of a ring and hanging around said 25 actuator means (31) and between the latter and the internal skirt wall (28) so as to be received in a first end cavity region (17a) adjacent the cover portion (23) of said connection device (1);
      - the first spring loaded actuator means (31) being 30 formed by a stem (31) engageable with a shoulder of said centrally obturator portion (27) on said final control element (26,27,28), so as to direct a first fluid communication by said first fluid (Qul) between a substantially central cross section area portion at the free end connection side on said 35 first device (1) and one (11) of the two distal ends (11,12) of the second device (2);
      - and said plurality of claws (6) each thereof comprising two opposed reverse sides comprising a seat engageable by a peripheral portion of the stem (31) on one side thereof

and on the reverse side abutting means for penetration said cover portion (23) and engaging said plurality of peripherally actuatable obturator portions (26) of said final control element (26,27,28), so as to direct a second fluid communication by a second fluid (Qu2) between a further cross section area at said free end on the first device (1) and the other (12) of the two connection ends (11,12) of the device (2);

- when said first and second devices (1,2) are mutually engaged.

10 16. An assembly according to claim 15, characterised in that said spring loaded stem (31) comprises an inner bore (33) running the length thereof and opened at one end thereof being intercepted by at least one radial bore (34) so as said stem (31) internally to be flooded by said first fluid (Qu1);  
15 and

- a variable peripheral passage region (38) defined by an outer portion at the opposite end of said stem (31) and said seat on the reverse side of the plurality of claws (6) so as to be flooded by said second fluid (Qu2), upon a stroke of  
20 said spring loaded stem (31).

17. An assembly (10) according to any of the preceding claims, characterised in that said fluids of different viscosity (Qu1,Qu2) comprise a first flow of gas (Qu1) and a second flow of liquid (Qu2).

25 18. A container (13) engageable to a liquid pre- and/or post-mix dispensing apparatus and to a source of a fluid characterised by comprising a connection device (1) defined in any of claims 1 to 14.

19. A container (13) engageable to a liquid pre- and  
30 post-mix dispensing apparatus and to a source of a fluid, characterised by comprising a fluid-extracting assembly as defined in any of claims 15 to 17.

FIG. 1

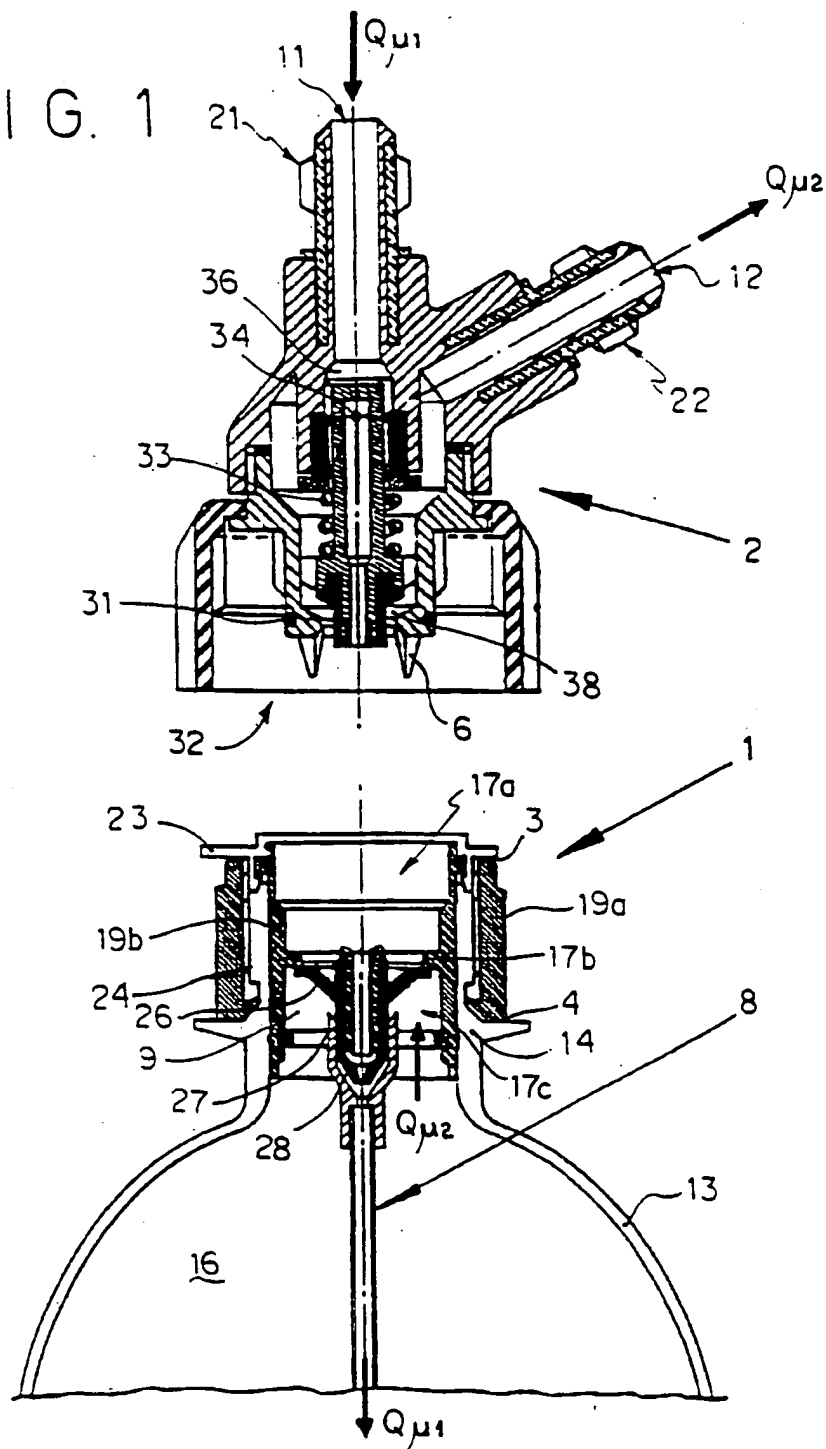


FIG. 2

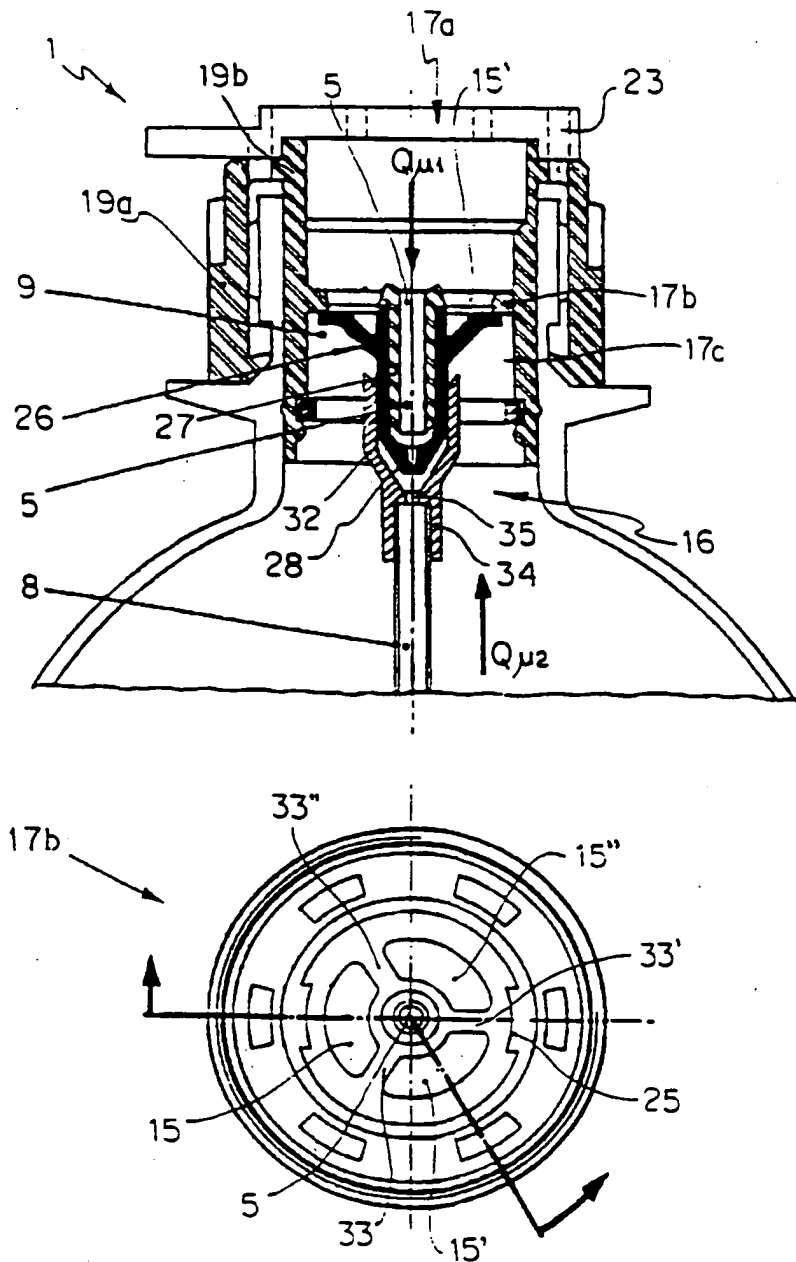


FIG. 3

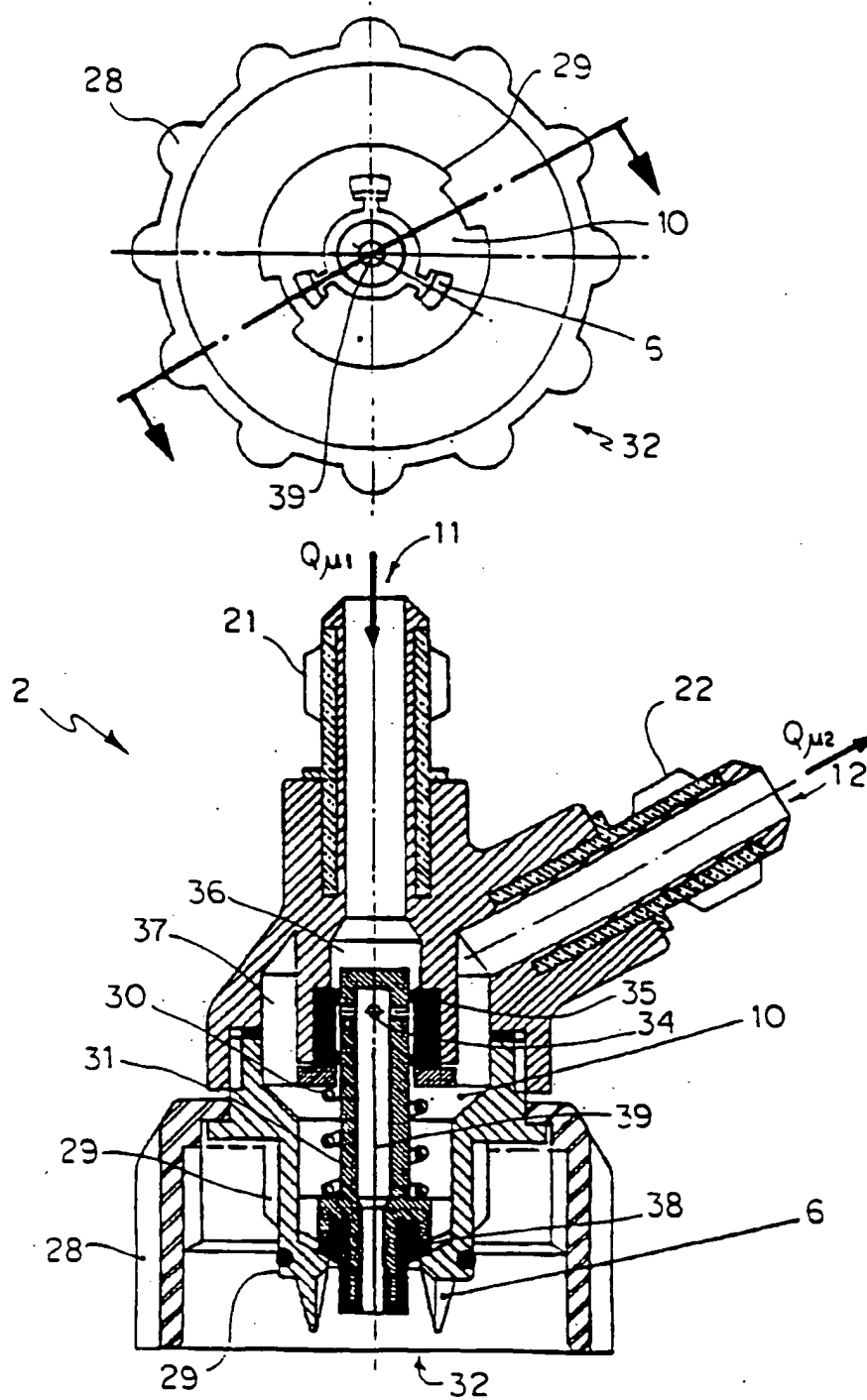
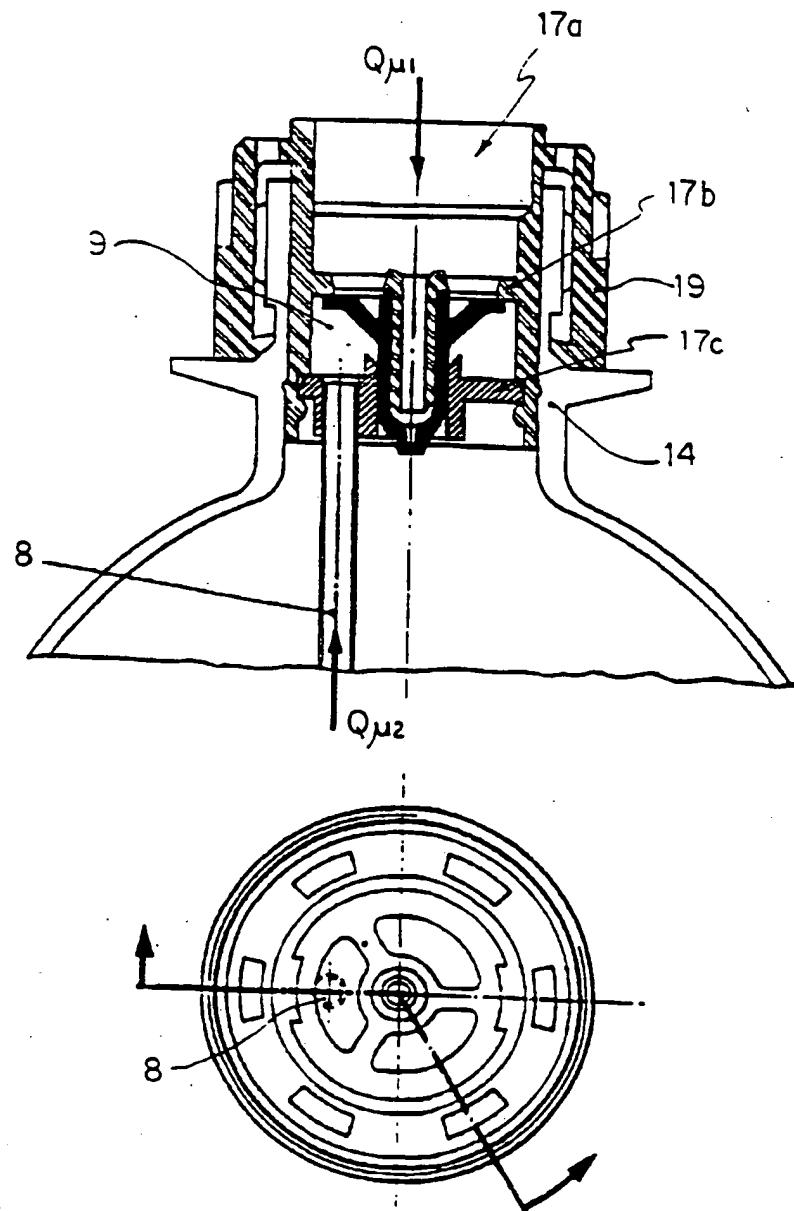


FIG. 4



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/BR 94/00032

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B67D1/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B67D B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO,A,94 10081 (ROYAL PACKAGING INDUSTRIES VAN LEER) 11 May 1994 see the whole document ---	1
Y	EP,A,0 226 713 (THE COCA COLA COMPANY) 1 July 1987 see page 6, line 16 - page 7, line 3; claim 1; figure 1 ---	1,2,4,6, 10-14
Y	EP,A,0 224 380 (BADERI) 3 June 1987 see claims 1,2; figures 2,3 ---	1,2,4,6, 10-14
A	US,A,4 612 952 (FALLON) 23 September 1986 ---	
A	US,A,3 498 313 (BELICH) 3 March 1970 -----	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

2 February 1995

Date of mailing of the international search report

15.02.95

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+ 31-70) 340-3016

Authorized officer

J.-P. Deutsch



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/BR 94/00032

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9410081	11-05-94	AU-B- 5343594	24-05-94
EP-A-0226713	01-07-87	JP-B- 6045396	15-06-94
		JP-A- 62064789	23-03-87
		AU-B- 591170	30-11-89
		DE-A- 3682488	19-12-91
		US-A- 4785973	22-11-88
EP-A-0224380	03-06-87	US-A- 4756347	12-07-88
		AU-A- 6514286	21-05-87
		JP-A- 62208380	12-09-87
US-A-4612952	23-09-86	NONE	
US-A-3498313	03-03-70	NONE	